

We claim:

1. A cleaning device for underwater vacuuming of debris from structural surfaces such as the bottom of swimming pools or other water bodies and comprises a substantially closed housing formed by wall means and providing a suction cavity, a debris-water feed inlet extending thru said wall means into said cavity and adapted to be moved with said device along said surfaces in proximity thereto, a debris-water discharge conduit extending thru said wall means and having an exit end surrounded by a filter container exterior to said housing for entrapping said debris, said conduit having a flow axis and an entry end opening into said cavity, a fluid ejector tube mounted in said cavity and extending thru said wall means and having a flow axis, a fluid inlet port on a distal end portion of said tube and adapted for connection exteriorly of said cavity to a source of high pressure fluid, said source being exterior to said cavity, said tube further having a fluid ejector end located within said cavity, said ejector end being spaced from said entry end of said conduit and thus providing a debris entry gap communicating with said entry end, the tube flow axis and the conduit flow axis being in substantial alignment, and wherein the flow area of said conduit is at least about twice the flow area of said tube, whereby when a fluid stream is ejected from said discharge end and across said gap and thru said conduit and into said container the pressure within said cavity will be reduced sufficiently to suck water-debris from said surfaces up to and into said stream for transport into said container without the inlet of said tube and source being exposed to said debris.

2. The device of claim 1 wherein the flow area of said conduit is from about five to about twelve times the flow area of said tube.

3. The device of claim 2 wherein said ejector end of said tube is spaced in said cavity from about one to about three inches from said entry end of said conduit, wherein the flow area of said conduit is from about 1.0 in<sup>2</sup> to about 2.0 in<sup>2</sup>, and wherein the flow area of said tube is from about 0.1 to about 0.4 in<sup>2</sup>.

4. The device of claim 3 wherein said fluid is water, wherein said high pressure fluid source comprises a water pump having a water feed inlet located outside of said housing, and wherein the operational flow rate of said pump is from about 500 to about 1,000 gal./hr.

5. The device of claim 4 wherein the volumetric water capacity of said cavity is from about 800 to about 1800 ml.

6. The device of claim 1 wherein said ejector end of said tube is

PMR 11-19-03 spaced in said cavity from about 1.5 to about 2.0 inches from said entry

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PMR 11-19-03 end of said conduit, wherein the flow area of said conduit is from about 1.5

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PMR 11-19-03 to about 2.0 in<sup>2</sup>, wherein the flow area of said tube is from about

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PMR 11-19-03 0.1 to about 0.15 in<sup>2</sup>, wherein said fluid is water, wherein said high

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pressure fluid source comprises a centrifugal water pump mounted on said housing and having a water feed inlet located outside of said housing, and wherein the operational flow rate of said pump is from about 500 to about 1,000 gal./hr.

7. The device of claim 4 wherein said filter container comprises a

PMR 11-19-03 flexible mesh fabric bag having from about 150/4 to about 250/4 size

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PMR 11-19-03 openings per in<sup>2</sup> of fabric surface.

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8. The device of claim 6 wherein said pump is battery operated at

PMR 11-19-03 between about six and <sup>fourteen</sup> twelve volts, and wherein said battery is electrically

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connected to said battery thru elongated handle means affixed to said housing and adapted to extend above a swimming pool edge for

maneuvering of said device along a pool surface by an operator outside of said pool.

9. The device of claim 1 wherein elongated fluid conduit means is connected at its one end to said inlet port and is adapted for connection at its other end to a high pressure fluid source located exteriorly of a water body.

10. The device of claim 9 wherein said conduit means comprises a garden type hose.

11. The device of claim 9 wherein said conduit means comprises a compressed air hose.

12. The device of claim 9 wherein said conduit means is supported by elongated handle means having one of its ends affixed to said housing.

13. A water jet vacuum operated device for cleaning debris from underwater surfaces, said device comprising a housing defining a suction cavity having a debris-water inlet adapted to be moved with said device along said surfaces in proximity thereto, and further having a debris-water outlet surrounded by a filter bag exterior to said cavity for entrapping debris, a water ejector tube mounted in said cavity in line with said outlet and adapted for connection exteriorly of said cavity to a source of high pressure water, said tube further having a water discharge end located within said cavity and spaced from said outlet to provide a debris entry gap communicating with said outlet, and wherein the flow area of said outlet is at least about twice the flow area of said tube, whereby when water is ejected from said discharge end across said gap and thru said outlet the pressure within said cavity will be reduced sufficiently to suck water-debris from said surfaces and thru said outlet and into said bag.